

spot towards the outer margin. Posterior wing undulated with darker brown from the base to beyond the middle, where it is crossed obliquely from margin to margin by a continuous, nearly straight band of seven silvery-white spots.

Exp. $2\frac{1}{10}$ inch.

Hab. New Granada. In the Collection of W. C. Hewitson.

5. *Lymanopoda albomaculata*, n. s. (Plate IX. fig. 6.)

Upperside rufous-brown near the base, darker brown beyond.

Underside rufous-brown. Anterior wing lighter towards the apex and outer margin. A line of four minute white spots parallel to the outer margin. Posterior wing lighter, minutely undulated throughout; crossed obliquely beyond the middle, from margin to margin nearly, by a band of seven detached spots (deviating from a straight line) of silvery white.

Exp. 2 inches.

Hab. New Granada. In the Collection of W. C. Hewitson.

This genus, except in its most typical species, scarcely differs from *Pronophila*.

XIII.—On the Endomychidæ of the Amazon Valley.

By H. W. BATES, Esq.

GENUS CORYNOMALUS.

IN the Transactions of the Entomological Society of London I have commenced a series of papers on the subject of the insect fauna of the valley of the Amazons, the result of eleven years' research in that region. They are limited at present to the group of Rhopalocercous or Diurnal Lepidoptera, and, besides a detailed review of the genera and species, will contain an investigation of the general question of the nature and relations of the fauna, which that group of insects is so well calculated to illustrate. I shall not be able, nor will it be necessary, to treat the whole, or any considerable number, of the insect families in the same copious way; it will be sufficient if I give from time to time, as the materials become completed, shorter essays upon detached families or smaller groups, communicating any facts that I may have observed regarding their habits, and describing the new species. In some groups, even of the favourite order Coleoptera, this task will be surrounded with difficulties in consequence of no recent monograph existing embodying in a connected form the various memoirs on the subject, thus necessitating tedious research for the already published descriptions in the bewildering maze of entomological literature. The object of the present paper is to give

an account of the Amazonian species of the family Endomychidæ, beginning with the genus *Corynomalus*; and here the task becomes an easy one, as one of the best of the many admirable monographs published of late years has been given on this subject by Dr. Gerstaecker so lately as the year 1858. In this work the previous literature has been so thoroughly and conscientiously worked up that we may with safety take it as a starting-point, and dispense with research into works anterior to its date; whilst the precision of the generic and specific descriptions renders it a pleasant labour to ascertain and supplement the newly discovered forms.

Dr. Gerstaecker in his introduction gives an elaborate review of the generalities relating to the family,—the whole structure internal and external, the position and affinities and the geographical distribution. But in the part of his subject relating to the habits and earlier states of the insects he had little to say, in consequence of the almost total want of information regarding the exotic species. It gives me great pleasure therefore to be able to contribute a little towards completing those portions of their history by describing the larvæ of two of the neo-tropical genera, *Corynomalus* and *Stenotarsus*. Of the former I bred two species, *C. discoideus* and *C. subcordatus*, but as they offered no material difference, I will describe the larva (and the pupa) of the former only.

The larva of *C. discoideus* (Pl. XI. fig. 5) is oval and convex, fleshy beneath, but above having a hard granular integument, sprinkled with minute scales; the margins of the thorax and abdomen dilated and flattened. The colour above is sooty-black with the margins fulvous; there is a double dorsal series of transverse, oval, velvety-black spots, around which the minute pale scales are arranged, similar scales forming also pale transverse lines on the margins. The mandibles (fig. 5 *b*) are simply but obtusely pointed, the palpi (fig. 5 *c, d*) taper to a point, the maxillary consisting of three joints; the blade of the maxilla is narrow, obtusely pointed, curved inwards near the tip, and on the outside of the curved part near the tip, ciliated. The antennæ (fig. 5 *a*) are elongate, cylindric, formed apparently of three joints, two basal, minute (the second perhaps only apparent, or separated by a constriction), and the third very long. There are four ocelli on each side of the head, viz. three in a triangle above and one below the insertion of the antennæ. The tarsi have one joint and a simple claw. The first thoracic segment is broadly but not deeply rounded-emarginate in front. The pupa is beset with horny and fleshy tubercles; there is a pair of long horny ones in the middle of the hind margin of each thoracic segment, and a

single one in the centre of each abdominal one; the sides of the mesothorax have each three long corneous spines, and the lateral margin of each of the first five abdominal segments is prolonged into a large trilobed fleshy process.

The larva of *Stenotarsus obtusus* (Pl. XI. fig. 6) is oblong-oval, widest behind; it is beset with long and fine pale hairs; eight of the abdominal segments have their lateral margins prolonged on each side into an obtuse lobe. The colour is fulvous, each of the thoracic segments having two large discoidal black spots, and the sides of the abdomen are occupied by a broad stripe of black, leaving a broad central vitta fulvous, through which runs a fine dorsal black line. The body is not so convex as that of *C. discoideus*; the prothorax is much longer, being semicircular, rounded in front instead of emarginate. The antennæ are similar in shape to those of the *Corynomalus*, but they are more slender, and there is no trace of the second apparent basal joint. I did not dissect the mouth.

I found these larvæ feeding in company with the perfect insects at different times on the minute fungous, or perhaps lichenous substance on the surface of old damp dead wood; either broken branches of forest trees, old barked stumps or palings around plantations, in the forest at Ega. When about to change, the larva (of *Corynomalus*) attaches itself by the tip of the abdomen to the surface of the wood, sometimes seeking a crevice for the purpose. The pupæ are thus found in clusters of numerous individuals near the places where the perfect insects are feeding.

With regard to the habits of the perfect insects, the whole family feed on fungi, and seem to prefer the smaller fungous growths; they are slow in motion (probably, like most other tropical Coleoptera, they are more active at night, but they do not come to lamps) and gregarious. Many species are amongst the commonest of tropical beetles, and are found wherever there is old dead wood in or near the forest. They are not usually found in the large woody Boleti, but almost always on small Boleti of loose texture, or on very minute, scarcely perceptible fungi. Neither are they seen on the very large fungi which grow in immense masses, springing up and decaying with great rapidity in the wet seasons on dead wood in the humid shades of the forest. These are more especially the food of the large Erotylidæ, which exist in equatorial America in great profusion both as to individuals and species. Many of the smaller species, especially of the genera *Epopterus*, *Anidrytus*, *Phalantha*, &c., are found only on slender dead twigs, which are generally spotted with minute fungi.

Dr. Gerstaecker gives statistics to show that the large-sized species of Endomychidæ (the *Eumorphini*) exist in far greater numbers in the tropics of the Old World than in those of the New. The species of the former are to those of the latter in the numeric proportion of four to one. This shows that they are far more highly developed in one hemisphere than in the other. It is true that the proportion is reversed in the case of the small-sized species (the *Dupsini*). In this group the Old-World species are to the New, in numbers, as one to four and a half. Notwithstanding this, on looking over a large general collection of the family, the great superiority of the Old-World species in size and variety of forms is very striking. On this account it would be worth while to inquire whether the large *Eumorphini* of the East do not occupy there that sphere in the economy of nature, which in America is filled by the large Erotylidæ. The latter family in America far surpass in variety and general individual bulk the members of the same group in the Old World. It would be interesting, therefore, to know whether the *Eumorphini* in the East live upon the same class of large ephemeral fungi in the humid forests, that in America is the peculiar prey of the Erotylidæ. When a new sphere of function is opened in nature, it is apparently filled by members of a group whose habits already in some measure fit them for it and who happen to be close at hand for the purpose; thus it is that similar or the same functions are performed in different parts of the world not always by the same family or group or species, but frequently by an allied group or species. That sphere of action which is filled in one hemisphere by a certain family, in another is filled by an analogous or by an allied family. Instances of this occur in all departments of natural history; there is a beautiful one in the diurnal Lepidoptera, where the Heliconianæ of the New World fill that sphere of action, which in the Old World is filled by the allied groups *Acræanæ* and *Danainæ*.

Family Endomychidæ.

Subfamily EUMORPHINÆ.

Genus CORYNOMALUS, (*Dejean*) Gerstaecker.

§ A. *Elytra gibbous, the convexity towards the middle bulging out so as to conceal part of the lateral margins when viewed from above.*

1. *Corynomalus maximus*, n. sp.

C. subglobosus, pieus, vix nitidus, antennis, articulo basali excepto, tibiisque nigris: thorace angusto, sublongiore, angulis apicalibus sub-

acutis, fere opaco, sericeo-nitente; elytris violaceo-nigris, nitidis, fortiter subrugoso-punctatis.—Long. lin. 5 (♀).

Pitchy, scarcely shining. Head opake. Antennæ stout, third joint about as long as the fourth and fifth united, the two latter of equal length, the sixth, seventh, and eighth joints much shorter and uniform in length; basal joint pitchy-red, the club black, opake, the rest shining black. Thorax much narrower and more elongate than is usual in this genus, fore-angles rather produced and acute, the sides from the base narrowed to one-third the length, then gradually dilated to near the apex, whence they are again narrowed to the apex, the side furrows not reaching to the middle, the longitudinal line faintly impressed, not perceptibly punctured, pitchy with a slight silken gloss. Scutellum shining, with a large opake fovea in the middle. Elytra nearly covered with large and deep punctures, many of them connected by rugæ, interstices convex in some places, smooth and shining, globose-convex, of equal breadth from the shoulders to two-thirds their length, then gradually narrowed to the apex, the external flattened margins very narrow; pitchy, with a violet tinge. Body beneath reddish-pitchy, including the under margins of the elytra, which are coarsely punctured. Legs pitchy-red, base of the hind femora and all the tibiæ black.

I have one example only of this large and distinct species, which was taken at Fonte Boa, on the Upper Amazons.

2. *Corynomalus rugosus*, n. sp.

C. subglobosus, piceus vix nitidus, antennis, articulis duobus basalibus exceptis, tibiisque nigris; thorace angusto, fere opaco, sericeo-nitente; elytris æneis nitidis fortissime rugoso-punctatis.—Long. lin. $3\frac{1}{2}$ (♀).

Head pitchy-red, very finely punctured, slightly shining. Antennæ with the joints short and stout, their relative lengths the same as in the preceding species; the basal joint red, the second pitchy; the club opake, the rest shining black. Thorax similar in shape to that of the preceding, but considerably shorter in comparison to its breadth, yet notably longer than the other species of the genus, reddish-pitchy, darker in the middle, very obscurely punctured, shining with a very slight silky gloss. Scutellum with a very large central fovea. Elytra short, compact, of equal breadth from the shoulders to two-thirds their length, then suddenly narrowed to the apex; covered nearly throughout with large and deep punctures, connected in groups by irregular rugæ, the interstices convex; brilliant dark brassy, the external margins moderate in breadth and ferruginous towards the apex. Breast piceous, scarcely shining, abdomen rusty-red, shining, the margins of the elytra piceous-brassy and coarsely rugose punctate. Femora and tarsi bright-red, tibiæ black.

I have only one example of this handsome species, which I took at St. Paulo, on the Amazon, near the Peruvian frontier.

- § B. *Elytra moderately convex, the whole of the lateral margins seen when viewed from above.*
- a. *Elytra at the base as broad or broader than in the middle (at least in the ♂), obtuse heart-shaped.*

3. *Corynomalus circumcinctus*, n. sp.

C. rufus, antennis rufis, articulis nonnullis ante clavam fuscis, ipsâ clavâ nigrâ; elytris punctatis, interstitiis æqualibus subtiliter punctatis, nitidis, nigro-cyaneis, margine omni et regione scutellari testaceo-rufis. Long. lin. 3 (♂ ♀).

Pale red. Head rather thickly punctured, shining. Antennæ slender, third joint shorter than the two following united, the seventh and eighth joints fuscous, the club black. Thorax short, the sides very slightly bowed outwards from the base to the apex, being broadest at two-thirds the length; finely punctured, and shining rather brightly with a silky gloss. Scutellum plane, pale red. Elytra evenly punctured, the interstices plane, and covered with very minute punctures; dark steel-blue, with the outer and basal margins and the region of the scutellum testaceous red. Body beneath, under-margins of the elytra, and legs pale red.

This species I found only at Obydos, on the Guiana side of the Lower Amazon; it was abundant on the branches of felled trees there in March 1859; but I have now before me only three examples, namely two males and one female. At first sight it might be taken for the *C. marginatus*, Fab., Gerst., which is peculiar to Guiana, especially as it is found on the Guiana side of the Amazons; but it differs from that species greatly in the punctuation of the elytra and in the want of pale sutural margins. The true *C. marginatus* I did not meet with at all on the Amazons. In the punctuation of the elytra our species resembles *C. discoideus*, and it might be said to represent that species on the Guiana side of the Amazons, as *C. discoideus* does not occur in company with it, although common in many other localities on the opposite side of the river.

4. *C. discoideus*, Fab., Gerstaecker, Mon. der Endom. p. 151.

I have before me one male and six females of a form which agrees extremely well with Gerstaecker's description of this species; six of the specimens were taken at Ega, and one at Santarem. Gerstaecker's examples came from Bahia; but he had examined others supposed to have been found in Columbia and near Rio Janeiro. It appears that he did not obtain from these various localities any wider deviations from the normal form than those described in his work as varieties *a* and *b*; on the Amazons, however, several forms more

strongly marked than those varieties are found in company with the type. I cannot decide to treat them as distinct species, and shall therefore describe them as varieties of *C. discoideus*, giving to the most distinct a separate name.

Var. 1. *C. robustus*. Thorace mox pone basin sensim ac paululum ampliato, elytris pone humeros sensim, apicem versus citius sed semper gradatim angustatis, margine pallido apud latera exiguo, apud humeros et apicem in maculam amplificato. Reliquis ut in typo.—Long. lin. 4 (♂).

Of this form I have two males, one taken at Ega and one at Fonte Boa; the elytra are much more tapering than in the same sex of the type. It appears a more robust insect, the antennæ seem to be thicker. The pale margin is extremely narrow along the sides, but is dilated at the shoulders, and especially at the apex, into a large spot.

Var. 2. Thorace angusto, mox pone basin sensim ac paululum ampliato, angulis anticis acutis. Reliquis ut in typo.—Long. lin. 3 (♀).

I have two examples of this form, taken at Ega. Like *C. robustus*, the thorax is not widened from the middle as in the type, but gradually and slightly widened from the base, rounded, and narrowed again slightly towards the apex. In every other respect it is the same as the type.

Var. 3. Antennis tenuibus, articulo 3^{to} quam 4^{to} et 5^{to} conjunctis longiore. Reliquis ut in typo.—Long. lin. 3½ (♂ ♀).

One example (male) from Ega, and one (female) from the river Tapajos.

Var. 4. Rufo-ferrugineus, aurichalceo-micans, antennarum articulis 4-8 fuscis, elytrorum margine præcipue humerali et apicali pallidiore; elytris subrugoso-punctatis interstitiis perminute punctatis.—Long. lin. 3½ (♂ ♀).

I have before me two males and three females, all from Ega. They differ from the var. *aurichalceus* of Gerstaecker in the coloration of the antennæ. They are not constant, however, in this character, some individuals having the antennæ much darker than others; one having only the tips of the seventh and eighth joints fuscous. It is curious that the typical examples of the species taken in the same locality should always have the same joints of a clear red colour, whilst the pale ones have them always more or less fuscous. The elytra are more roughly punctured in this variety than in the type.

5. *Corynomalus humeralis*, n. sp.

C. rufo-ferrugineus, antennis, articulis duobus basalibus exceptis, tibiisque nigris; thorace lato, angulis anticis obtusis; elytris breviter cordatis, mediocriter subrugoso-punctatis, interstitiis perminute punctulatis, violaceis, nitidis, humeris apicibusque macula flava.—Long. lin. $3\frac{1}{2}$ (♀).

Head finely punctured, shining. Antennæ with the basal joint bright red, second pitehy, the rest black, shining. Thorax similar in shape to that of *C. discoideus*, but having the fore-angles more produced, smooth, shining, finely punctured. Elytra obtuse-cordate, not quite so convex as in *C. discoideus*, covered with moderately large shallow punctures here and there connected by rugæ, the interstices glossy and finely punctured; violet or brassy-violet, the very prominent and glossy humeral callus and a subrounded spot at the extreme apex yellow. The body beneath shining red; the under-margins of the elytra brassy-piceous, rugose; the basal half of the tibiæ black.

I have two examples, both females, of this species, which I took at St. Paulo.

6. *Corynomalus lætus*, n. sp.

C. rufo-ferrugineus, antennis, articulis duobus basalibus exceptis, tibiisque nigris; thorace pone basin parum ampliato, angulis anticis prominulis, acutis; elytris elongato-cordatis, fortiter rugoso-punctatis, interstitiis convexis, subtiliter punctulatis, læte cyaneis, margine flavo apud latera angustissimo, apud humeros et apices in maculam amplificato.—Long. lin. $3\frac{3}{4}$ (♂).

Shining red. Head punctured. Two basal joints of antennæ red, the rest black, shining. Thorax with the sides slightly and very gradually widened to a little beyond the middle, thence rather more abruptly to the apices, which are produced and acute. Scutellum red, smooth. Elytra more elongate than in *C. discoideus*, otherwise similar in shape, not quite so convex, roughly rugose-punctate; the interstices raised and finely punctured, shining steel-blue; the lateral margins narrowly edged with yellow, which colour expands at the shoulders into a large spot covering the humeral callus, and at the apex into a triangular spot. Beneath, the under-margins of the elytra are yellow, with a stripe along the inner edge brassy; the tibiæ have the basal half black; the rest of the under surface and the legs are red.

One example, also from St. Paulo. Notwithstanding the considerable points of difference between this and the preceding, I am inclined to consider them as belonging to one and the same species. I think it probable that the *C. apicalis* of Gerstaecker is another variety. I believe we have to deal here with a very variable species, which would require a much larger number of examples to enable us to define its limits correctly, and unfortunately I neglected whilst

in that country to obtain a sufficient number of specimens. I think it likely the following is also another variety of this species.

7. *Corynomalus auratus*, n. sp.

C. rufo-ferrugineus, antennis, articulis duobus basalibus exceptis, tibiisque nigris; thorace pone medium paulo ampliato; elytris ovatis, fortissime rugoso-punctatis, interstitiis subtiliter punctulatis, auratis nitidissimis apicibus flavo-rufis.—Long. lin. $4\frac{1}{4}$ (♂).

Head and prothorax shining, sparingly punctured; the sides of the latter gradually widened after the middle, rounded and narrowed to the apex, the fore-angles rounded. Elytra slightly widened from the shoulders to one-fourth the length, then slightly narrowed to two-thirds the length, afterwards gradually narrowed to the apex, the convexity regular and moderate; they are covered with large punctures, which are everywhere connected in groups by rugæ; the interstices convex, highly polished, very finely and sparingly punctured, brilliant golden, the apex only with a yellowish-red spot. Beneath, the body and legs shining red; the tibiæ, except their apices, black; the under-margins of the elytra brassy, coarsely punctured.

The middle tibiæ of the male in this species are strongly bowed, with the usual emargination on the inner side near the apex very large. I captured only one individual of this remarkably beautiful form, at St. Paulo, in company with the two preceding.

8. *Corynomalus Gerstaeckeri*, n. sp.

C. rufo-ferrugineus, antennarum articulis 4–8 elongatis, clava nigra; prothoracis lateribus apud medium fere rectis, angulis anticis prominulis; elytris subovatis, medioeriter punctatis, interstitiis subtiliter punctulatis, nigro-cyaneis, margine omni, sutura fasciisque duabus, post medium linea angusta in medio connexis, rufo-ferrugineis.—Long. lin. $4\frac{1}{4}$ (♂).

Head and thorax shining, thickly and finely punctured. Antennæ with the joints 4–8 more elongated than is usual in this genus, red, seventh and eighth joints piceous; club black. Thorax scarcely perceptibly widened from the base to near the apex, whence narrowed, the apical angles being produced and subacute. Elytra shaped as in the preceding species, but the convexity much sharper, rising more abruptly from the thorax, moderately punctured, the interstices thickly and finely punctured, blue-black; the margins and suture narrowly and equally edged with red; behind the middle are two narrow crooked fasciæ of the same breadth and colour as the margins, connected together in the middle by a narrower line of the same colour; the anterior fascia is a little behind the middle, the posterior midway between it and the apex. Body beneath and legs ferruginous, shining; under-margins of the elytra yellow, punctured.

The middle tibiæ in the male are not bowed, the apical notch short

but deep, and the first ventral segment has a small tubercle in the middle of its hind edge.

I captured one individual of this remarkable species at Obydos, in company with *C. interruptus*, Gerst., and *C. cinctus*, Fab., the extreme varieties of which it curiously resembles in colour.

9. *Corynomalus lividus*, n. sp.

C. ovatus, paulo convexus, rufo-ferrugineus, antennis, articulis duobus basalibus exceptis, tibiisque nigris; elytris punctatis, interstitiis punctulatis, brunneo-rufis parum nitidis.—Long. lin. $3\frac{1}{4}$ (♂ ♀).

The body is more oblong and less convex than in the other species of this section. Reddish. Head punctate, shining. Antennæ with the joints slender, the first red, the second pitchy, the rest black, shining. Prothorax slightly widened after the middle, thence narrowed to the apex, the apical angles prominent and acute, punctured, shining. Elytra slightly but regularly convex, the convexity being nearly in continuity with the prothorax, its highest part at the middle of the elytra, widest behind the shoulders, thence narrowed and rounded gradually to the apex, punctured, the interstices finely punctured; brownish-red, livid, the margins scarcely paler. Under surface of the body, legs except the tibiæ which are black, and under-margins of the elytra rufous, shining.

This was a common species at Para, on small Boleti covering old palings in plantations, or on decayed branches of trees in the forest. I have before me three males and one female. The legs are remarkably short, the middle tibiæ of the male very crooked near the apex, and the first ventral segment in the same sex is furnished with a minute tubercle in the middle of the hinder edge.

10. *Corynomalus subcordatus*, Gerstaecker, Mon. p. 157.

This species is common throughout the Amazon region from Para to St. Paulo. All the examples before me (two) from the last-mentioned locality seem to belong to var. *b* of Gerstaecker, having the head, thorax, femora, and tarsi clear red ferruginous. The specimens from Ega (six) have the same parts more obscure, with the elytra brassy-violet or dark greenish-blue. The typical examples, as Gerstaecker mentions, occur at Para.

11. *Corynomalus quadriplagiatus*, n. sp.

C. ferrugineo-rufus sericeo-micans, antennarum clava fusca, elytrorum maculis duabus magnis cyaneo-nigris vix nitidis.—Long. lin. $3\frac{1}{2}$ (♀).

Compact, rusty-red. Head distinctly punctured. Antennæ shining red, club fuscous. Thorax with the sides gradually but very slightly

dilated from a little before the middle, fore-angles obtuse, the hinder right-angled, not perceptibly punctate; rufous shining, with a silky gloss. Elytra shaped like those of *C. discoideus*, surface coriaceous, evenly and moderately punctured, scarcely shining; each with two large blue-black patches, one larger on the basal part of the disk, one smaller on the apical part, leaving a rufous margin of about equal breadth all around them. The under surface of the body and legs rufous.

I have only one example of the present species, which was taken at Serpa, on the Guiana side of the Lower Amazon. I was at first inclined to refer it to the *C. quadrimaculatus* of Gerstæcker; but the nature of the thoracic surface, the colour of the antennæ, and the shape of the spots of the elytra, as described by that author, seem to show that we have here to deal with a different species.

12. *Corynomalus angulicollis*, n. sp.

C. rufo-ferrugineus, antennarum articulis interdum nonnullis ante clavam fuscis, ipsa clava nigra; prothorace apud medium angulariter ampliato, angulis omnibus acutis, opaco; elytris subnitidis vel fere opacis, in femina postice subampliatas, punctatis, nigro-cyaneis apicibus rufis, vel rufo-ferrugineis plagis magnis cyaneo-fuscis.—Long. lin. $3\frac{1}{2}$ (♂ ♀).

Rusty-red. Antennæ with the third joint as long as the two following united, a variable number of joints preceding the club fuscous, sometimes the extreme tips of the seventh and eighth joints alone dusky. Prothorax from the base slightly narrowed to one-third the length, then abruptly widened to two-thirds the length, afterwards slightly narrowed to the tip, the dilatation forming an obtuse angle; fore angles prominent, hind angles produced and acute, the usual grooves strongly marked, the whole surface opaque. Elytra in the male cordate, very slightly narrowed from behind the shoulders to after the middle, in the female oval, gradually widened from the shoulders to about the middle, then rounded and more slowly narrowed to the apex, the shoulders with a long and narrow callus bordered on the inner side by an oblong deep fovea, the whole surface rather closely covered with moderate-sized punctures and slightly shining; they present the following diversities of coloration:—

1. Rusty-red unicolorous.
2. Rusty-red, with an obscure greenish-fuscous stripe along the disk near the suture, interrupted in the middle.
3. Rusty-red, each with two large subtriangular greenish-fuscous patches on the disk, one occupying the basal half, the other the apical, leaving around them a rusty red border of equal breadth.
4. Dark-blue or greenish-black; apex, the extreme margin from the apex to about the middle, the basal margin and humeral callus narrowly pale ferruginous.

Body beneath and legs rusty-red; the under-margins of the elytra thickly punctured, and in the dark varieties blue-black along the basal half.

This species was common at Ega. I have described it from three male and four female examples, in the coloration of the elytra: two of them belong to var. 1, two to var. 2, one to var. 3, and two to var. 4; it was thus not possible to fix upon any of them as the type of the species, describing the others as varieties. I have therefore comprehended them all in the specific definition. The species seems to be allied to *C. 4-maculatus* of Gerstaecker.

13. *Corynomalus nigripennis*, n. sp.

C. rufus, antennis, articulis duobus basalibus exceptis, tibiisque nigris; thorace apud medium fortiter rotunde ampliato, angulis posticis productis acutis, opaco; elytris in femina postice ampliatis, punctatis, subopacis, cæruleo-nigris, apicibus flavo-rufis.—Long. lin. $3\frac{3}{4}$ (♀).

Rusty-red. Antennæ with the third joint as long as the two following united, the two basal joints red, the rest black, shining. Thorax before the middle strongly widened, rounded and narrowed more gradually to the tip, apical angles obtuse, hinder angles projecting, acute, opaque. Scutellum red. Elytra in female gradually widened from the shoulders to two-thirds the length, then more quickly narrowed to the apex, the convexity very gradual from the base, the highest part placed far behind the middle; the humeral callus narrow, prominent, bordered on the inner side by an oblong fovea, thickly covered with moderate-sized punctures, coriaceous, opaque, except along the sutural margins, which are slightly shining, dark bluish-black, apex alone edged with yellowish-red. Beneath rusty-red, shining; under-margins of the elytra bluish-black; legs red, the tibiæ, their tips excepted, black.

One specimen, from St. Paulo. In the shape of the elytra this species would come under the following subsection; but I believe the male, if it were known, would be similar in shape to that of *C. angulicollis*, and therefore would belong to the present subdivision. It so nearly resembles the dark female varieties of *C. angulicollis* that I think it very likely to be a local variety of it. It requires, however, a long list of specimens (at present wanting) to decide such questions as these.

b. *Elytra in both sexes narrower at the base than in the middle.*

14. *Corynomalus interruptus*, Gerstaecker, Mon. p. 160.

At Obydos, on the Guiana side of the Lower Amazon, in company with *C. cinctus*.

15. *Corynomalus cinctus*, Fab. ; Gerstaecker, Mon. p. 162.

At Obydos ; also at Ega, Fonte Boa, and St. Paulo, on the Upper Amazon.

Dr. Gerstaecker has devoted much space to the analysis of these two forms with their numerous varieties, and he gives as a result that the latter is always distinguishable from the former by the following characters:—1. The antennæ are always black, with the exception of the first two joints, which are rusty-red ; 2. The disk of the thorax is black, the colour generally being divided into two lateral spots, which, though often notably reduced in size, are never entirely absent ; and, 3. The tibiæ are black at the basal and rust-coloured at the apical half. In the typical examples, also, the black colour of the under side of the body, where only the middle of the breast and the anus are red, is characteristic. *C. interruptus* is an abundant species in Brazil, including Para, whence the Berlin Museum obtained its specimens, whilst *C. cinctus* is found only in Columbia and thence further northward to Guatemala. I believe both will prove to be only geographical forms of one and the same species, as the great majority of the specimens which I obtained in the Amazon region, from Obydos to near the Peruvian frontier, partake of the characters of one and the other—a natural result when two forms are not decidedly distinct, seeing that this district of country lies between the ranges of the two extreme forms. Of eighteen examples now before me, one only agrees strictly with Gerstaecker's description of *C. interruptus* ; it has the thorax, the tibiæ, and the under side of the body wholly red, the first four joints of the antennæ are red, and the fifth to the eighth are pitchy. It was taken at Obydos, on the Lower Amazons, in company with numerous individuals having most of the above-mentioned characters of *C. cinctus*. Of seventeen examples which I refer to *C. cinctus*, five have the thorax spotless red, the antennæ (except the basal two joints) and the base of the tibiæ remaining black, as they are in the other twelve. Two or three of the specimens have the sides of the breast, and one also the middle of the abdomen, dusky ; with these exceptions, all have the whole of the under surface of the body clear rusty-red. In none of them is the disk of the thorax wholly black, as in the typical individuals of *C. cinctus*. We may conclude, therefore, from these considerations, that the two forms are related to each other, not as species, but as geographical varieties. By attending carefully to the geographical distribution of forms, we shall find that there are several gradations of relationship between them, and not merely the two

simple ones of variety and species. There is, first, the case of individual differences which arise amongst the members of one and the same species in one and the same locality: these can scarcely be called varieties, as they may exist amongst the offspring of the same parents. Secondly, there is the case of species which are tolerably constant to their type in one region whilst extremely variable in another. There are others which, in a distant locality, produce a variety which embraces all the individuals of the species existing there: in some cases there is an intermediate space, between the ranges of these varieties and their typical forms, which is unpeopled by either the species or its variety: in numerous instances, however, there exist no apparent natural barriers. The origin and maintenance of these defined local varieties is a highly interesting question: some of them have a great resemblance to their typical forms, whilst others differ greatly, although often more in appearance than in reality. It can be shown in some instances, where the local form is considered on all hands to be a perfectly distinct species, that all the points of difference from its parent form can be paralleled separately by instances in undoubted varieties of species of the same group. The first step in specific dissimilarity is afforded us by Nature in those instances where two closely allied forms, each inhabiting its separate area, live together in an intermediate district without amalgamating. The dissimilarity is proved to be incomplete when two forms, apparently specifically distinct, intermingle and produce connecting links when they meet together on the frontiers of their respective ranges. It is, however, I think, very desirable that the two or more forms in such cases should be treated separately in our books and placed separately in our collections, and therefore *C. interruptus* and *C. cinctus* may require their distinctive appellations. The tendency in systematic zoology to treat geographical forms as distinct species, has the advantage of exciting attention to the exact determination of the localities of specimens. A variation, which in one case might be an individual difference of little importance, becomes in another a scientific fact of the highest significance.

§ *C. Elytra very slightly convex; joints of the antennæ short and thick; abdomen of the male with conspicuous sexual marks on the ventral surface.*

16. *Corynomalus dentatus*, Fab.; Gerstaecker, Mon. p. 166.

I obtained, at Ega, one example only of this species, a male. It is darker in colour than any of the varieties mentioned by Gerstaecker

as occurring at Bogota, the only district in which the species has hitherto been found. The colour is bright rusty-red; the elytra are brassy-greenish-black, the outer margins and a narrower edge at the base bordering the scutellum with two short imperfect fasciæ and a triangular marginal spot rusty-red; the first fascia commences at the margin, behind the shoulders, curves downwards, and terminates about halfway to the suture; the second arises about the middle of the lateral margin and extends straight across without reaching the suture; the spot is on the margin, halfway between the second fascia and the apex, and marks the place where the third fascia originates in the typical examples. The rest is in accordance with the description of Gerstaecker.

XIV.—*Characters of undescribed Species of the Family Chalcidæ.*

By F. WALKER, F.L.S.

THE following communication is the sequel of my remarks on the characters and distribution of the Chalcidites, which I commenced in the first Number of this Journal, by some notes on the Leucospidæ.

This part will contain descriptions of Chalcidæ, and observations on that family, which is usually placed next to the Leucospidæ; but there is no connecting link between the two groups, and, as it will afterwards appear, the Leucospidæ are associated with the rest of the Chalcidites by means of the Torymidæ.

The undescribed Chalcidæ are numerous, and in the following pages the characters of new species will precede the sketch of the geographical distribution of the family.

In these descriptions some of the generic names are retained, others are set aside. As in other cases, the characters of recently-discovered species of this family obliterate most of the distinctions between many of the established genera, and then ensues the alternative of making many new genera or of uniting the old genera; and this fact is an illustration of the rule, that an increase of knowledge modifies or changes, or does away with, all previous knowledge.

SMIERA LUTEIPENNIS. *Fem.* Lutea, glabra, nitens; caput et thorax subpunctata; vertex niger; antennæ ferruginæ, graciles, filiformes; scutum disco piceo; scutellum inerme; petiolus brevis; abdomen fusi-forme, acuminatum, ferrugineo fasciatum; pedes anteriores nigro vittati; coxæ extus piceo subtus nigro vittatæ; femora postica subdentata, striga basali lata nigra; alæ limpidae, apice cinereæ.